

#6

OIPE

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/833,745

DATE: 07/26/2001
TIME: 09:45:06

Input Set : A:\78728106.app
Output Set: N:\CRF3\07262001\I833745.raw

P.S

3 <110> APPLICANT: ROBERTS, JOSEPH
4 SETHURAMAN, NATARAJAN
5 MACALLISTER, THOMAS
7 <120> TITLE OF INVENTION: CLONING, OVEREXPRESSION AND THERAPEUTIC USE OF
8 BIOACTIVE HISTIDINE AMMONIA LYASE
10 <130> FILE REFERENCE: 078728/0106
12 <140> CURRENT APPLICATION NUMBER: 09/833,745
13 <141> CURRENT FILING DATE: 2001-04-13
15 <150> PRIOR APPLICATION NUMBER: 60/197,770
16 <151> PRIOR FILING DATE: 2000-04-14
18 <160> NUMBER OF SEQ ID NOS: 66
20 <170> SOFTWARE: PatentIn Ver. 2.1
22 <210> SEQ ID NO: 1
23 <211> LENGTH: 37
24 <212> TYPE: PRT
25 <213> ORGANISM: Artificial Sequence
27 <220> FEATURE:
28 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic
29 polypeptide
31 <400> SEQUENCE: 1
32 Leu Asn Ala Gly Ile Thr Pro Val Val Arg Glu Tyr Gly Ser Leu Gly
33 1 5 10 15
35 Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Val Leu Met
36 20 25 30
38 Gly Glu Gly Glu Ala
39 35
42 <210> SEQ ID NO: 2
43 <211> LENGTH: 40
44 <212> TYPE: PRT
45 <213> ORGANISM: Artificial Sequence
47 <220> FEATURE:
48 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic
49 polypeptide
51 <400> SEQUENCE: 2
52 Gly Met Leu Asn Ala Gly Ile Thr Pro Val Val Arg Glu Tyr Gly Ser
53 1 5 10 15
55 Leu Gly Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Val
56 20 25 30
58 Leu Met Gly Glu Gly Glu Ala Thr
59 35 40
62 <210> SEQ ID NO: 3
63 <211> LENGTH: 287
64 <212> TYPE: PRT
65 <213> ORGANISM: Artificial Sequence
67 <220> FEATURE:
68 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic
69 polypeptide

ENTERED

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/833,745

DATE: 07/26/2001
TIME: 09:45:06

Input Set : A:\78728106.app
Output Set: N:\CRF3\07262001\I833745.raw

71 <400> SEQUENCE: 3
 72 Met Ala Ser Ala Pro Gln Ile Thr Leu Gly Leu Ser Gly Ala Thr Ala
 73 1 5 10 15
 75 Asp Asp Val Ile Ala Val Ala Arg His Glu Ala Arg Ile Ser Ile Ser
 76 20 25 30
 78 Pro Gln Val Leu Glu Glu Leu Ala Ser Val Arg Ala His Ile Asp Ala
 79 35 40 45
 81 Leu Ala Ser Ala Asp Thr Pro Val Tyr Gly Ile Ser Thr Gly Phe Gly
 82 50 55 60
 84 Ala Leu Ala Thr Arg His Ile Ala Pro Glu Asp Arg Ala Lys Leu Gln
 85 65 70 75 80
 87 Arg Ser Leu Ile Arg Ser His Ala Ala Gly Met Gly Glu Pro Val Glu
 88 85 90 95
 90 Arg Glu Val Val Arg Ala Leu Met Phe Leu Arg Ala Lys Thr Leu Ala
 91 100 105 110
 93 Ser Gly Arg Thr Gly Val Arg Pro Val Val Leu Glu Thr Met Val Gly
 94 115 120 125
 96 Met Leu Asn Ala Gly Ile Thr Pro Val Val Arg Glu Tyr Gly Ser Leu
 97 130 135 140
 99 Gly Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Val Leu
 100 145 150 155 160
 102 Met Gly Glu Gly Glu Ala Thr Asp Ala His Gly Asp Ile Arg Pro Val
 103 165 170 175
 105 Pro Glu Leu Phe Ala Glu Ala Gly Leu Thr Pro Val Glu Leu Ala Glu
 106 180 185 190
 108 Lys Glu Gly Leu Ala Leu Val Asn Gly Thr Asp Gly Met Leu Gly Gln
 109 195 200 205
 111 Leu Ile Met Ala Leu Ala Asp Leu Asp Glu Leu Leu Asp Ile Ala Asp
 112 210 215 220
 114 Ala Thr Ala Ala Met Ser Val Glu Ala Gln Leu Gly Thr Asp Gln Val
 115 225 230 235 240
 117 Phe Arg Ala Glu Leu His Glu Pro Leu Arg Pro His Pro Gly Gln Gly
 118 245 250 255
 120 Arg Ser Ala Gln Asn Met Phe Ala Phe Leu Ala Asp Ser Pro Ile Val
 121 260 265 270
 123 Ala Ser His Arg Glu Gly Asp Gly Arg Val Gln Asp Ala Tyr Ser
 124 275 280 285
 127 <210> SEQ ID NO: 4
 128 <211> LENGTH: 405
 129 <212> TYPE: PRT
 130 <213> ORGANISM: Artificial Sequence
 132 <220> FEATURE:
 133 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic
 134 polypeptide
 136 <400> SEQUENCE: 4
 137 Met Ala Ser Ala Pro Gln Ile Thr Leu Gly Leu Ser Gly Ala Thr Ala
 138 1 5 10 15
 140 Asp Asp Val Ile Ala Val Ala Arg His Glu Ala Arg Ile Ser Ile Ser
 141 20 25 30

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/833,745

DATE: 07/26/2001
TIME: 09:45:06

Input Set : A:\78728106.app
Output Set: N:\CRF3\07262001\I833745.raw

```

143 Pro Gln Val Leu Glu Glu Leu Ala Ser Val Arg Ala His Ile Asp Ala
144      35          40          45
146 Leu Ala Ser Ala Asp Thr Pro Val Tyr Gly Ile Ser Thr Gly Phe Gly
147      50          55          60
149 Ala Leu Ala Thr Arg His Ile Ala Pro Glu Asp Arg Ala Lys Leu Gln
150      65          70          75          80
152 Arg Ser Leu Ile Arg Ser His Ala Ala Gly Met Gly Glu Pro Val Glu
153      85          90          95
155 Arg Glu Val Val Arg Ala Leu Met Phe Leu Arg Ala Lys Thr Leu Ala
156      100         105         110
158 Ser Gly Arg Thr Gly Val Arg Pro Val Val Leu Glu Thr Met Val Gly
159      115         120         125
161 Met Leu Asn Ala Gly Ile Thr Pro Val Val Arg Glu Tyr Gly Ser Leu
162      130         135         140
164 Gly Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Val Leu
165 145      150         155         160
167 Met Gly Glu Gly Glu Ala Thr Asp Ala His Gly Asp Ile Arg Pro Val
168      165         170         175
170 Pro Glu Leu Phe Ala Glu Ala Gly Leu Thr Pro Val Glu Leu Ala Glu
171      180         185         190
173 Lys Glu Gly Leu Ala Leu Val Asn Gly Thr Asp Gly Met Leu Gly Gln
174      195         200         205
176 Leu Ile Met Ala Leu Ala Asp Leu Asp Glu Leu Leu Asp Ile Ala Asp
177      210         215         220
179 Ala Thr Ala Ala Met Ser Val Glu Ala Gln Leu Gly Thr Asp Gln Val
180 225      230         235         240
182 Phe Arg Ala Glu Leu His Glu Pro Leu Arg Pro His Pro Gly Gln Gly
183      245         250         255
185 Arg Ser Ala Gln Asn Met Phe Ala Phe Leu Ala Asp Ser Pro Ile Val
186      260         265         270
188 Ala Ser His Arg Glu Gly Asp Gly Arg Val Gln Asp Ala Tyr Ser Leu
189      275         280         285
191 Arg Cys Ser Pro Gln Val Thr Gly Ala Ala Arg Asp Thr Ile Ala His
192      290         295         300
194 Ala Arg Leu Val Ala Thr Arg Glu Leu Ala Ala Ile Asp Asn Pro
195 305      310         315         320
197 Val Val Leu Pro Ser Gly Glu Val Thr Ser Asn Gly Asn Phe His Gly
198      325         330         335
200 Ala Pro Val Ala Tyr Val Leu Asp Phe Leu Ala Ile Ala Val Ala Asp
201      340         345         350
203 Leu Gly Ser Ile Ala Glu Arg Arg Thr Asp Arg Met Leu Asp Pro Ala
204      355         360         365
206 Arg Ser Arg Asp Leu Pro Ala Phe Leu Ala Asp Asp Pro Gly Val Asp
207      370         375         380
209 Ser Gly Met Met Ile Ala Gln Tyr Thr Gln Ala Gly Leu Val Ala Glu
210 385      390         395         400
212 Asn Lys Arg Leu Ala
213      405
216 <210> SEQ ID NO: 5

```

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/833,745

DATE: 07/26/2001
TIME: 09:45:06

Input Set : A:\78728106.app
Output Set: N:\CRF3\07262001\I833745.raw

217 <211> LENGTH: 513
218 <212> TYPE: PRT
219 <213> ORGANISM: Artificial Sequence
221 <220> FEATURE:
222 <223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic
223 polypeptide
225 <400> SEQUENCE: 5
226 Met Ala Ser Ala Pro Gln Ile Thr Leu Gly Leu Ser Gly Ala Thr Ala
227 1 . 5 10 15
229 Asp Asp Val Ile Ala Val Ala Arg His Glu Ala Arg Ile Ser Ile Ser
230 . 20 25 30
232 Pro Gln Val Leu Glu Glu Leu Ala Ser Val Arg Ala His Ile Asp Ala
233 . 35 40 45
235 Leu Ala Ser Ala Asp Thr Pro Val Tyr Gly Ile Ser Thr Gly Phe Gly
236 . 50 55 60
238 Ala Leu Ala Thr Arg His Ile Ala Pro Glu Asp Arg Ala Lys Leu Gln
239 . 65 70 75 80
241 Arg Ser Leu Ile Arg Ser His Ala Ala Gly Met Gly Glu Pro Val Glu
242 . 85 90 95
244 Arg Glu Val Val Arg Ala Leu Met Phe Leu Arg Ala Lys Thr Leu Ala
245 . 100 105 110
247 Ser Gly Arg Thr Gly Val Arg Pro Val Val Leu Glu Thr Met Val Gly
248 . 115 120 125
250 Met Leu Asn Ala Gly Ile Thr Pro Val Val Arg Glu Tyr Gly Ser Leu
251 . 130 135 140
253 Gly Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Val Leu
254 . 145 150 155 160
256 Met Gly Glu Gly Glu Ala Thr Asp Ala His Gly Asp Ile Arg Pro Val
257 . 165 170 175
259 Pro Glu Leu Phe Ala Glu Ala Gly Leu Thr Pro Val Glu Leu Ala Glu
260 . 180 185 190
262 Lys Glu Gly Leu Ala Leu Val Asn Gly Thr Asp Gly Met Leu Gly Gln
263 . 195 200 205
265 Leu Ile Met Ala Leu Ala Asp Leu Asp Glu Leu Leu Asp Ile Ala Asp
266 . 210 215 220
268 Ala Thr Ala Ala Met Ser Val Glu Ala Gln Leu Gly Thr Asp Gln Val
269 . 225 230 235 240
271 Phe Arg Ala Glu Leu His Glu Pro Leu Arg Pro His Pro Gly Gln Gly
272 . 245 250 255
274 Arg Ser Ala Gln Asn Met Phe Ala Phe Leu Ala Asp Ser Pro Ile Val
275 . 260 265 270
277 Ala Ser His Arg Glu Gly Asp Gly Arg Val Gln Asp Ala Tyr Ser Leu
278 . 275 280 285
280 Arg Cys Ser Pro Gln Val Thr Gly Ala Ala Arg Asp Thr Ile Ala His
281 . 290 295 300
283 Ala Arg Leu Val Ala Thr Arg Glu Leu Ala Ala Ile Asp Asn Pro
284 . 305 310 315 320
286 Val Val Leu Pro Ser Gly Glu Val Thr Ser Asn Gly Asn Phe His Gly
287 . 325 330 335

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/833,745

DATE: 07/26/2001
TIME: 09:45:06

Input Set : A:\78728106.app
Output Set: N:\CRF3\07262001\I833745.raw

```

289 Ala Pro Val Ala Tyr Val Leu Asp Phe Leu Ala Ile Ala Val Ala Asp
290          340          345          350
292 Leu Gly Ser Ile Ala Glu Arg Arg Thr Asp Arg Met Leu Asp Pro Ala
293          355          360          365
295 Arg Ser Arg Asp Leu Pro Ala Phe Leu Ala Asp Asp Pro Gly Val Asp
296          370          375          380
298 Ser Gly Met Met Ile Ala Gln Tyr Thr Gln Ala Gly Leu Val Ala Glu
299 385          390          395          400
301 Asn Lys Arg Leu Ala Val Pro Ala Ser Val Asp Ser Ile Pro Ser Ser
302          405          410          415
304 Ala Met Gln Glu Asp His Val Ser Leu Gly Trp His Ala Ala Arg Lys
305          420          425          430
307 Leu Arg Thr Ser Val Ala Asn Leu Arg Arg Ile Leu Ala Val Glu Met
308          435          440          445
310 Leu Ile Ala Gly Arg Ala Leu Asp Leu Arg Ala Pro Leu Lys Pro Gly
311          450          455          460
313 Pro Ala Thr Gly Ala Val Leu Glu Val Leu Arg Ser Lys Val Ala Gly
314 465          470          475          480
316 Pro Gly Gln Asp Arg Phe Leu Ser Ala Glu Leu Glu Ala Ala Tyr Asp
317          485          490          495
319 Leu Leu Ala Asn Gly Ser Val His Lys Ala Leu Glu Ala His Leu Pro
320          500          505          510
322 Ala
325 <210> SEQ ID NO: 6
326 <211> LENGTH: 511
327 <212> TYPE: PRT
328 <213> ORGANISM: Artificial Sequence
330 <220> FEATURE:
331 <223> OTHER INFORMATION: Description of Artificial Sequence: Formula polypeptide
333 <220> FEATURE:
334 <221> NAME/KEY: MOD_RES
335 <222> LOCATION: (1)..(9)
336 <223> OTHER INFORMATION: Variable amino acid
338 <220> FEATURE:
339 <221> NAME/KEY: MOD_RES
340 <222> LOCATION: (11)
341 <223> OTHER INFORMATION: Variable amino acid
343 <220> FEATURE:
344 <221> NAME/KEY: MOD_RES
345 <222> LOCATION: (14)
346 <223> OTHER INFORMATION: Variable amino acid
348 <220> FEATURE:
349 <221> NAME/KEY: MOD_RES
350 <222> LOCATION: (17)
351 <223> OTHER INFORMATION: Variable amino acid
353 <220> FEATURE:
354 <221> NAME/KEY: MOD_RES
355 <222> LOCATION: (20)
356 <223> OTHER INFORMATION: Variable amino acid

```

Use of n and/or Xaa has been detected in the Sequence Listing.
 Review the Sequence Listing to insure a corresponding explanation is presented in the <220> to <223> fields of each sequence using n or Xaa.

VERIFICATION SUMMARY
PATENT APPLICATION: US/09/833,745

DATE: 07/26/2001
TIME: 09:45:07

Input Set : A:\78728106.app
Output Set: N:\CRF3\07262001\I833745.raw

L:824 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:827 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:830 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:833 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:836 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:839 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:842 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:845 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:848 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:851 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:854 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:857 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:860 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:863 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:866 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:869 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:872 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:875 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:878 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:881 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:884 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:887 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:890 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:893 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:896 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:899 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:902 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:905 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:908 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:911 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:914 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:917 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6
L:1694 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1697 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1700 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1703 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1706 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1709 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1712 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1715 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1718 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1724 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1727 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1730 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1733 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1736 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1739 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:1742 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11

VERIFICATION SUMMARY

PATENT APPLICATION: US/09/833,745

DATE: 07/26/2001

TIME: 09:45:07

Input Set : A:\78728106.app

Output Set: N:\CRF3\07262001\I833745.raw

L:1745 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11

L:1748 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11